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| 09/384,141 | 08/27/1999 | IKKO FUSHIKI | 03797.81834 | 7425 |

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EXAMINER

LAROSE, COLIN M

ART UNIT

PAPER NUMBER

2623

DATE MAILED: 04/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application

09/384,141

Applicant(s)

FUSHIKI ET AL.

Examiner

Colin M. LaRose

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-54 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3, 6. 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged.

Drawings

2. The drawings filed on 27 August 1999 are acceptable subject to correction of the informalities indicated on the attached "Notice of Draftperson's Patent Drawing Review," PTO-948. In order to avoid abandonment of this application, correction is required in reply to the Office action. The correction will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-14, 25, 32-41, 42-47, and 49 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The above claims either make reference to or are dependent upon claims that make reference to "RGB/RGBA." The Specification does not specifically convey the meaning of "RGB/RGBA."

Thus, "RGB/RGBA" is hereinafter presumed to mean -- RGB or RGBA --.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 23 does not reference claim 15 in its [claim 15's] entirety.

Suggested modification is to replace "steps recited in" with -- method of --.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

8. Claims 1-9, 14-17, 22-26, 31-35, and 40-50 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 5,946,113 by Pritchett.

Regarding claims 1, 15, 23, 24, 32, 41, 42, and 48, Pritchett discloses, for the purpose of providing high quality, substantially error-free color in images, a computer-readable medium

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(element 135, figure 1) having computer-executable instructions for performing the steps of mapping measured color values to an expanded RGB color space (column 3, lines 33-36) wherein the expanded RGB color space includes values beyond a visible range of color values, and labeling an image determined by the color values mapped to the expanded RGB color space as an expanded RGB color space. Figure 4 illustrates that extended RGB color space triplets are identified (labeled) as such upon being output from color space converter 400.

Pritchett's teachings encompass a digitized image processing system in which an image digitizer outputs digital signals representing a color image to an apparatus that uses the digital signals to provide representation of a high quality visually error-free expanded color space color image (figure 1).

Pritchett's teachings apply to an expanded RGB color space having at least a precision and range sufficient to include values beyond the range of humanly visible colors (column 6, lines 18-22) without visually perceptible error.

Pritchett's teachings also represent at least one of super transparent and super opaque colors using an alpha channel for at least one of transparency information and opaqueness information (elements 460 and 470, figure 4).

Regarding claims 2, 3, 43 and 44, Pritchett teaches mapping color data values of a source color space image to color data values of expanded RGB/RGBA color space and mapping expanded RGB/RGBA color space to color data values of a destination color space (figure 7).

Regarding claims 4 and 45, Pritchett discloses clipping the extended RGB/RGBA color data values for the destination color space when the RGB/RGBA values lie outside a predetermined range (column 8, lines 25-30).

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Regarding claims 6 and 47, the Applicant's specification states, "when the size of each component is extended to higher bit (12 bit or higher), the non-linearity requirement is eliminated" (page 8, lines 6-7). Pritchett discloses extending the size of each component to 13 bits (column 6, lines 18-22) and, as a result, the extended RGB color space is linear in visual intensity.

Regarding claims 8 and 34, Pritchett teaches the expanded RGB color space extending beyond the range of $[0, 1.0]$ when normalized to 1.0 in RGB (column 5, lines 1-4 and column 6, lines 18-22).

Regarding claim 9, 17, 26, and 35, Pritchett includes the step of multiplying normalized RGB values by a predetermined matrix in mapping to an extended RGB color space (column 6, lines 53-58).

Regarding claims 5 and 46, Pritchett includes the step of utilizing a predetermined function that maps the extended RGB/RGBA color data values to color data values in a selected destination color space (element 730, figure 7 and column 8, lines 15-37).

Regarding claims 14, 22, 31, and 40, Pritchett's teachings include the case wherein color data values are one of non-premultiplied color data values and premultiplied color data values. It is noted that this limitation covers all cases.

Regarding claim 49, Pritchett discloses color operations defined in RGB color space that are extended to an expanded RGB color space (column 7, lines 25-28).

Regarding claim 50, Pritchett discloses extending the alpha channel beyond a normalized range using the same methods of extending RGB color data (column 7, lines 3-15).

Regarding claims 7, 16, 25, and 33, Pritchett discloses an extended RGB color space (as included in the expanded color space) that includes at least the visible range of color values (column 6, lines 15-22), is defined by a gamut that extends beyond normalized values (column 5, lines 1-4 and column 6, lines 18-22), and may include an alpha channel for at least one of transparency information and opaqueness information (column 7, lines 3-15).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 10, 18, 27, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pritchett, as applied to claims 15, 24, and 32, in view of Stokes and U.S. Patent 5,502,580 by Yoda et al. ("Yoda").

Regarding claims 10, 18, 27, and 36, and 51-54, Pritchett discloses converting YCC color data to RGB color data (column 3, lines 45-47).

Pritchett is silent to the conversion of XYZ color space data to RGB data. Pritchett's teachings are described in terms of converting color in YCC color space to a corresponding color in an RGB space, but Pritchett notes that these choices of color spaces are for convenience only and that the disclosure applies to conversions between other color spaces (column 3, lines 44-59).

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It is noted that the YCC color space is a well-known device-independent color space, which can be uniquely converted to and from the standard CIE-XYZ color system (see Yoda, column 5, line 65 through column 6, line 9). Therefore, the YCC and XYZ color spaces are deemed to be interchangeable and substantially equivalent for representing device-independent color data.

Stokes discloses a transformation matrix based on the 1931 CIE D65 spectrum distribution (equation (6), page 5) for converting 1931 CIE-XYZ color space data into RGB color space data wherein Y has been normalized to 1 (section 3.1, page 4). This transformation matrix is substantially equivalent to the claimed transformation matrix.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Pritchett by Stokes since Pritchett's system applies to conversions for color spaces other than YCC, and Yoda establishes that YCC and XYZ are substantially equivalent in that there exists a unique conversion between the two.

Further in regards to claims 51 and 52, the above modification to Pritchett represents the color data values as normalized RGB values (column 5, lines 1-4), which are inherently an appearance match for corresponding 1931 CIE-XYZ values, and obtained using the preselected 1931 CIE D65 spectrum distribution.

Further in regards to claims 53 and 54, the above modification to Pritchett represents the color data values as absolute RGB values (element 330, figure 3), which are inherently an absolute match for corresponding 1931 CIE-XYZ values, and obtained using the predetermined matrix based on the 1931 CIE D65 spectrum distribution.

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11. Claims 11-13, 19-21, 28-30, and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pritchett.

Regarding claim 11, 19, 28, and 37, Pritchett discloses representing the extended RGB with 13 bits to cover the extended RGB range of (-4, 4). Ten bits are used for fractional portions, two bits for integer portions, and one sign bit (column 6, lines 18-22).

One of ordinary skill in the art recognizes the advantage of using a large number of bits to represent digital image data. Therefore, Pritchett's representation of color data value using 13 bits (rather than 16 or 17 or 18, etc.) is a design choice. Applicant's specification states "... in one embodiment, color data values may be expressed in a signed 16-bit integer..." This suggests that the choice of 16 bits to represent extended RGB data is not an inventive step and is merely a design choice.

Regarding claims 13, 21, 30, 39, Pritchett discloses clipping extended RGB values to RGB values (column 8, lines 25-30). In Pritchett's embodiment, RGB data is represented by ten bits (column 5, lines 6-9), and extended RGB data is represented by 13 bits (column 6, lines 18-22), so clamping involves transforming color space data from 13 to 10 bits.

As stated above, Pritchett's representation of extended RGB with 13 bits is a design choice. Similarly, the representation of RGB data in ten bits is also a design choice. Therefore, choosing to clip 16-bit data to 8-bit data rather than 13-bit data to 10-bit data is a design choice, and no inventive steps are taken.

Regarding claims 12, 20, 29, and 38, techniques for converting normalized color data to 16-bit color data by the multiplication of a scalar were well known to those of ordinary skill in

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the art at the time of the invention. These claims are necessitated by the choice of representing color data in 16 bits and do not present any inventive steps.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,268,847 by Glen

"Photography – Electronic Still Picture Imaging – Extended sRGB Color Encoding – E-sRGB." Photographic and Imaging Manufactures Association, Inc. First Edition, 18 May 2001.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colin M. LaRose whose telephone number is (703) 306-3489. The examiner can normally be reached Monday through Thursday from 8:00 to 5:30. The examiner can also be reached on alternate Fridays.

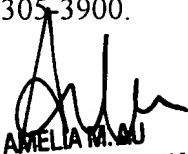
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au, can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-5397.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Colin M. LaRose

Examiner

Group Art Unit 2623


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